

Newsletter from EVDC ESA atmospheric Validation Data Centre

March 2020

<https://evdc.esa.int>

The Purpose

The main purpose of this newsletter is to announce a major update of EVDC online platform that introduces new tools and upgrades of existing functionalities. The new EVDC portal adds cloud processing capabilities, backed by high-end computing center, with easy to use web interface and improved satellite and Cal/Val data search functions, improved documentation and help system, as well as, access to new Cal/Val datasets and satellite products.



Fig. 1 EVDC Portal Home Page

About EVDC

EVDC aims to be the main European source of access to the correlative data for validation of atmospheric composition products from satellite platforms.

The EVDC portal offers several tools supporting the user in terms of Cal/Val data query, data upload/download, format conversion (GEOMS conversion routines) and for production of ECMWF parameter's maps. The EVDC platform also provides an access to satellite data for specific missions, in particular the system supports new atmospheric composition/dynamic missions namely Sentinel-5P an in the near future Aeolus.

The portal can be easily expanded to support new campaigns and satellite missions. Data exchange with the EVDC is regulated by a protocol with the aim to ensure data ownership, to prevent re-distribution to third parties and to protect intellectual properties.

EVDC Portal Update Includes

- Access to full archive of Sentinel 5P products.
- Enhanced Cal/Val search capabilities.
- Online GEOMS file generator.
- Upgraded Orbit Prediction Tool.
- Upgraded data processing capabilities.
- New data processing interface.
- Better help system, documentation and support.
- Metadata harvesting and sharing.

Access to Full Archive of Sentinel 5P Products

EVDC provides registered user with an access to daily updated archives of Sentinel 5P level 2 data. Users can query the products using many advanced filters and download them or save their search results and schedule bulk processing jobs online using commands provided by the HARP tool (<https://atmospherictoolbox.org/harp/>) and bulk download the processing results.

The screenshot shows the EVDC ESA search interface. At the top, there are logos for EVDC and ESA, and a navigation menu with items like Home, Search Cal/Val Data, Search Satellite Data, Upload Data, Documentation, Tools, Campaigns, Publications, Overpass Tool, Contact Us, and My EVDC. Below the navigation is a search query form with the following details:

Satellite	Sentinel-5p
Instrument	TROPOMI
Timeliness	NRTI
Product Type	SSP_NRTI_L2_O3___
Processor Version	
Start date	2019-11-01
End date	2019-12-19
Longitude	12.5
Latitude	42

Below the search query form is a 'Refine search' button. To the right is a 'World View of Search Results' section showing a 3D map of the Earth with a red dashed grid overlaying the search area. Below the map is a 'Save Search' button. At the bottom, there is a table of search results:

Thumbnail	File Name	Size (MB)	Created	Satellite Name	Instrument
	SSP_NRTI_L2_O3___20191209T124110_20191209T124610_11167_01_01010...	31	2019-12-09T12:46:17Z	Sentinel-5p	TROPOMI
	SSP_NRTI_L2_O3___20191209T110110_20191209T110610_11166_01_01010...	31	2019-12-09T11:06:16Z	Sentinel-5p	TROPOMI
	SSP_NRTI_L2_O3___20191205T121555_20191205T122055_11110_01_01010...	31	2019-12-05T12:21:01Z	Sentinel-5p	TROPOMI

Fig. 2 Example search results for Sentinel 5P data

Enhanced Cal/Val Search Capabilities

The Cal/Val search facility now allows users to use an interactive map when searching for correlative data and offers better speed and integrity of search terms. The help system and tooltips explaining the meaning of each field and linking to the relevant documentation in the portal make Cal/Val data search more accessible.

Online GEOMS File Generator

As part of our effort to support standardization of correlative data formats, an [online tool](#) has been developed with the aim to generate GEOMS file(s) and make them available for download. It requires as input a Metadata file and Data file(s) and writes scientific measurements to HDF4, HDF5 or netCDF as output.

Upgraded Orbit Prediction Tool

The Orbit Prediction Tool is more tightly integrated with the Cal/Val database and allows now to visualize locations of ground networks on 3D Globe along with some background information about the stations.

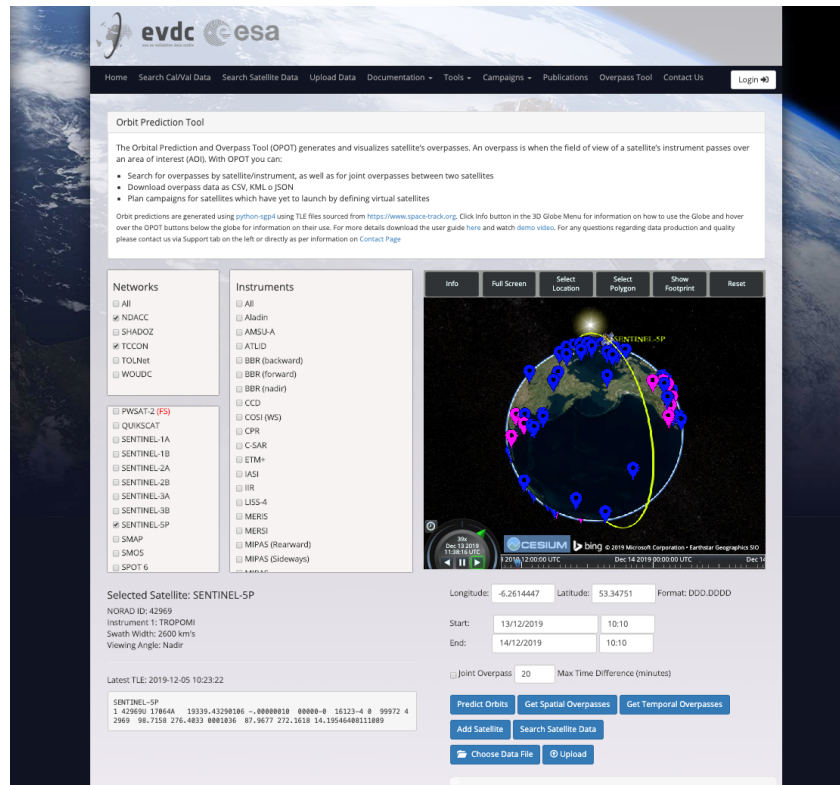


Fig. 3 Orbit prediction tool with Stations and Networks locations

New Data Processing Interface

In support to the access of the Sentinel 5P data archive a new EVDC data processing interface has been developed in order to streamline and simplify workflows related to satellite data products using the cloud infrastructure.

Users can save their search results and catalogue product bundles and then use these bundles as an input for processing jobs. They can also store and reuse frequently used types of HARP Operations. The processing jobs scheduled for bundles of products are called Orders.

Each Order can be converted into a Systematic Order which means the same search criteria will be applied to the future products and the results systematically delivered through email notifications.

Upgraded Data Processing Capabilities

The EVDC online data processing capabilities have been migrated to ICHEC infrastructure, namely the [Kay supercomputer](#), where it operates on "Cluster" type nodes. The new processing infrastructure allows for faster and more parallelized execution of processing jobs, greatly improving scalability and potential of the whole system. Further improvements and optimizations of the new infrastructure are upcoming.

Metadata harvesting and sharing

EVDC is connected to other data archives through data harvesting technologies. Currently, Atmospheric EO and Cal/Val data are available from multiple sources and data archives across the world, there is no so-called "one-stop-shop" for search of data. In order to facilitate simpler and faster search methods for the users, EVDC is now setting up harvesting methods for sharing

metadata between data archives from a number of national and international projects and programs.

There is a growing interest in using Cal/Val data, particularly in connection with the new Sentinel missions and other upcoming satellites, as well as in Copernicus and related initiatives. Through metadata sharing, EVDC aims to encourage cooperation between the various data archives, promote open data policy and strengthen collaboration throughout EO disciplines in the best possible way.

Metadata sharing leads to:

- Data available to more users
- Larger contribution rate in publications
- Proper acknowledgements and more visibility
- Data can be understood and interpreted by any user

More information about the metadata sharing , the OAI-PMH technique and "behind-the-scenes" information can be found here: (<http://evdc.esa.int/documentation/oai-pmh/>).

To register your archive in this initiative and to set up the required protocols, please contact the EVDC team (nadirteam@nilu.no). Our database management team will help you getting started and provides front line support for setting up harvester services.

Better Help System, Documentation and Support

After initial tests of the updated platform performed by scientists involved in Cal/Val projects it became clear that more contextual help and documentation reference needs to be provided. The contextual help hint system was developed and some more references provided in the areas of satellite search, Cal/Val search and Orbit Prediction.

The Team Behind

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Main responsibilities: Cal/Val data, Metadata harvesting, GEOMS tools

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